5-6-93

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAY 6 1993

MEMORANDUM

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

SUBJECT: TRIFLURALIN: DowElanco and Trifluralin Data Development Consortium Response to the Trifluralin Reg. Std. Update dated 10/91. Residue Chemistry Requirement for Processed Potato Commodities.

(Chemical No. 036101)
MRID No. 42514501
CBRS No. 10781
DP BARCODE: 183828

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Attached is the review of **Trifluralin** residue chemistry data submitted in response to data requirements for a potato processing study, as required in the Registration Standard Update of 10/91. This information was reviewed by Acurex Corp. under supervision of CBRS and has been revised to reflect Branch policies. A revised tentative summary of residue chemistry data requirements is included.

Attachment 1: Registrant's Response to Residue Chemistry Data Requirements.

cc (with attachment 1): A.Aikens, Trifluralin Reg. Std. File, SF, RF, Circ, Acurex, J.Fleuchaus(LE-132P).

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TRIFLURALIN
(Chemical Code 036101)
(CBRS No. 10781; DP Barcode D183828)

TASK 3

Registrant's Response to Residue Chemistry Data Requirements

January 8, 1993

Contract No. 68-DO-0142

Submitted to:

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Arlington, VA 22202

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TRIFLURALIN

(Chemical Code 036101)

(CBRS No. 10781; DP Barcode D183828)

REGISTRANT'S RESPONSE TO RESIDUE CHEMISTRY REQUIREMENTS

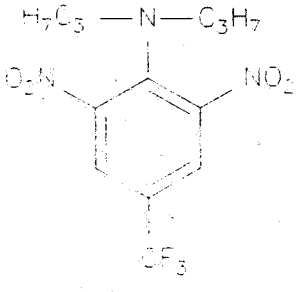
Task 3

BACKGROUND

The Trifluralin Guidance Document (4/87) and the Trifluralin Reregistration Standard Update (10/91) required data depicting residues of trifluralin in or on potato commodities (chips, granules, and dried potatoes) processed from whole potatoes bearing measurable weathered residues. In response, DowElanco and the Trifluralin Data Development Consortium submitted data (1992; MRID 42514501) depicting residues of trifluralin in or on whole potatoes and potato processed products. This submission is reviewed here to determine its adequacy in fulfilling residue chemistry data requirements. The Conclusions and Recommendations stated in this review pertain only to the magnitude of trifluralin residues in or on processed potato commodities.

The nature of the residue in plants and animals is adequately understood. The residue of concern in both plants and animals is trifluralin per se. Adequate analytical methods are available for enforcing trifluralin tolerances in plants. These methods are listed in PAM, Vol. II as Methods II and III.

Tolerances for residues of trifluralin (α,α,α-trifluoro-2,6-dinitro-*N,N*-dipropyl-*p*-toluidine) in or on raw agricultural commodities are currently expressed in terms of trifluralin per se (40 CFR §180.207 and §185.5900). There are no Codex MRLs for residues of trifluralin; therefore, there is no question with respect to Codex/U.S. tolerance compatibility.



Trifluralin

CONCLUSIONS/RECOMMENDATIONS

1. The submitted study is adequate to satisfy the trifluralin reregistration data requirement for a potato processing study.

2. The GC/electron capture detector (ECD) method described in the current submission, method AM-AA-CA-R023-AA-755, is adequate for the determination of trifluralin residues in or on potatoes and processed potato commodities.

3. Trifluralin residues were undetectable (<0.01 ppm) in or on whole potatoes harvested from test sites in CA and ID after postemergence applications at up to 5x the maximum registered use rate. Residues were also undetectable in potatoes receiving a combined preplant and postemergence application of trifluralin at ca. 1x the maximum use rate. Residues were detected at 0.01 ppm from split applications at 2x the maximum label rate and at 0.01-0.046 ppm from split applications at 4x the maximum label rate.

4. In processed commodities from potatoes treated at ca. 4x the maximum label rate for the combined preplant and postemergence application, trifluralin residues appeared to concentrate up to 5x in wet peel and 280x in dry potato peel. Trifluralin residues did not concentrate in potato flakes or chips.

5. The registrant should propose a feed additive tolerance for residues of trifluralin in processed potato waste using the maximum theoretical concentration of residues in dry peel. Based on the established 0.05 ppm tolerance for potatoes and considerations discussed in this review, we recommend that a level of 3 ppm is appropriate.

Note to SRRD: The "(N)" designation should be deleted from all 40 CFR §180.207 entries. The current listing for "vegetables, root" is inappropriate and should be revised to reflect currently accepted crop groupings. Once tolerances are established for commodities previously included under "vegetables, root (excluding carrots)," this listing should be deleted from 40 CFR §180.207.

DETAILED CONSIDERATIONS

Residue Analytical Methods

In conjunction with the potato processing study, DowElanco and the Trifluralin Data Development Consortium submitted a method description (1992; MRID 42514501) for the analysis of trifluralin in or on potatoes and its processed commodities. Trifluralin residues were determined using method AM-AA-CA-R023-AA-755, which was previously described

in the Trifluralin Residue Chemistry Chapter (7/85), and is a modification of Method II in PAM, Vol II. In brief, residues in crop samples are extracted with methanol, partitioned into methylene chloride, cleaned-up by Florisil column chromatography, and analyzed by GC/ECD. The reported detection limit for the method is 0.01 ppm. The identity of trifluralin residues in samples of dried potato peel were confirmed using GC/mass spectroscopy.

Concurrent method recovery samples were run using control samples of whole potatoes, wet and dry peel, flakes, and chips fortified with trifluralin at 0.1 ppm. Concurrent method recoveries are summarized in Table 1. Sample calculations and chromatograms were provided. The data indicate that method AM-AA-CA-R023-AA-755 is adequate for collecting data on residues of trifluralin per se from potatoes and its processed commodities.

Table 1. Recoveries of trifluralin from whole potatoes and processed potato commodities fortified with trifluralin at 0.1 ppm.

Commodity	Percent Recovery
Whole Tubers	85-100[a]
Wet Peel	89, 83
Dry Peel	89, 89
Chips	84, 82
Flakes	77, 88

[a]Ten samples were analyzed

Magnitude of the Residue in Processed Foods/Feeds

Potato Processed Commodities. A tolerance of 0.05 (N) ppm has been established for residues of trifluralin per se in or on root crop vegetables, excluding carrots (40 CFR §180.207). A REFs search, dated 10/8/92, of DowElanco's trifluralin product registrations indicates that trifluralin, formulated as a 4 or 5 lb/gal EC (EPA Reg. Nos. 62719-93, -116, and -118), 10% G (EPA Reg. No. 62719-131), or a 80% dry formulation (EPA Reg. No. 62719-216), is currently registered for use on potatoes. Directions from the above labels indicate that trifluralin can be applied to potatoes at 0.5-1 lb ai/A, depending on soil type, as a preemergence or postemergence, broadcast spray that is incorporated into the soil. No PHI is listed for potatoes.

DowElanco and the Trifluralin Data Development Consortium submitted data (1992; MRID 42514501) from 12 tests conducted in CA(6) and ID(6) depicting trifluralin residues in or on whole potatoes and in processed potato commodities. In three of the tests in each state, trifluralin (4 lb/gal EC) was applied both preplant and postemergence as a broadcast

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spray at 0.38, 1.12, and 1.88 lb ai/A at each application for total application rates of 0.76, 2.25, and 3.76 lb ai/A/year, respectively (0.8x, 2.3x, and 3.8x). In the remaining three tests in each state, trifluralin (4 lb/gal EC) was applied as a single postemergence application at 1, 3, and 5 lb ai/A (1x, 3x, and 5x). All applications were made using ground equipment at 17.5-25 gal/A, and the trifluralin was immediately incorporated into the soil.

Duplicate samples were harvested from control and test plots in CA and ID at 60 and 101 days posttreatment, respectively, and were stored frozen for 5-9 days until extraction and analysis. To obtain processed samples, single bulk samples were harvested from the 3.8x split application and the 5x postemergence application at 73 days (CA) and 102 days (ID) posttreatment. Samples for processing were stored fresh in a potato cellar for 30-40 days prior to processing. Whole potatoes were processed into wet and dry peel, flakes, and chips using a simulated commercial process. After processing, samples were stored frozen at an unspecified temperature for 10-15 days until extraction and analysis.

Trifluralin residues were determined using AM-AA-CA-R023-AA-755, which has a reported detection limit of 0.01 ppm. Apparent residues of trifluralin were nondetectable in or on control samples of each commodity.

Residues of trifluralin in or on whole potatoes and processed potato commodities are summarized in Table 2. Residues of trifluralin in or on processed commodities are compared to averaged residues of trifluralin in whole tubers from the duplicate samples that were analyzed after 5-9 days of frozen storage. Supporting data depicting the stability of trifluralin residues in or on whole potatoes stored fresh for up to 40 days were not supplied; however, the residue chemistry guidelines specify that residues should be determined in processed commodities that have been processed according to typical commercial practices. Potatoes would normally be stored in potato cellars and shipped unfrozen to processors. Additionally, the residue levels reported for processed commodities are considerably higher than the theoretical maximum concentration of residues in potato commodities. Therefore, no further storage stability data are needed for this study.

Residues of trifluralin were <0.01 ppm in or on potatoes harvested from both test sites including 18 samples from the postemergence treatments at up to 5x the maximum label rate and 6 samples from the combined preplant and postemergence applications at 0.8x. Residues of trifluralin were <0.01-0.01 ppm and 0.01-0.05 ppm in or on whole potatoes from the 2.3x and 3.8x split applications, respectively.

Residues of trifluralin were <0.01-0.043 ppm in or on wet peel, and 0.186-2.5 ppm in or on dry peel, and nondetectable (<0.01 ppm) in potato flakes and chips. No data were submitted for potato granules. However, because the processing of potato flakes and granules is similar, the data for flakes can be substituted for data from granules.

Residues of trifluralin concentrated by up to 5x and 280x in wet and dry potato peel, respectively, but did not concentrate in potato flakes or chips. The registrant should propose

feed additive tolerances for residues of trifluralin per se in processing potato waste. Based on the established 0.05 ppm tolerance for potatoes and the maximum concentration factor in the present study, a feed additive tolerance 15 ppm would be indicated; however, this tolerance is obviously much higher than one would reasonably expect from normal use patterns of trifluralin on potatoes. In fact, the analyses reported from these two test sites in CA and ID indicate that, even at a use rate equivalent to 5x the maximum amount allowed on the trifluralin labels, the residues in dry potato peel would not exceed 2.8 ppm. Dried potato peel normally constitutes about 2% of the weight of whole fresh potatoes (Memo from S.Malak to C. Trichilo, 12/22/86, Potato Waste as a Livestock Feed..). This would lead to a maximum theoretical concentration factor for trifluralin in dried peels of about 50X. Thus, it is recommended that the registrant propose a feed additive tolerance for residues of trifluralin in processed potato waste based on the theoretical maximum concentration of residues in dry peel. We recommend that a level of 3 ppm is appropriate.

Table 2. Residues of trifluralin in processed potato commodities.

Commodity	Application (rate[a])	State	Trifluralin Residues (ppm)[b]	Concentration Factor
Whole potatoes	preplant+postemergence	CA	0.01, 0.01	NA[d]
	(3.76 lb ai/A; 3.8x)	ID	0.01-0.05 (0.033[c])	NA
	postemergence	CA	<0.01	NA
	(5 lb ai/A; 5x)	ID	<0.01	NA
Wet Peel	preplant+postemergence	CA	0.05	5x
	(3.76 lb ai/A; 3.8x)	ID	0.03	0.9x
	postemergence	CA	<0.01	-
	(5 lb ai/A; 5x)	ID	0.01	-[e]
Dry Peel	preplant+postemergence	CA	2.8	280x
	(3.76 lb ai/A; 3.8x)	ID	1.3	39x
	postemergence	CA	0.2	-[e]
	(5 lb ai/A; 5x)	ID	0.4	-[e]
Flakes	preplant+postemergence	CA	<0.01	-
	(3.76 lb ai/A; 3.8x)	ID	<0.01	-
	postemergence	CA	<0.01	-
	(5 lb ai/A; 5x)	ID	<0.01	-
Chips	preplant+postemergence	CA	<0.01	-
	(3.76 lb ai/A; 3.8x)	ID	<0.01	-
	postemergence	CA	<0.01	-
	(5 lb ai/A; 5x)	ID	<0.01	-

[a]Application rate expressed in lb ai/A and as a factor of the maximum label rate. [b]Values are corrected for method recoveries. [c]Average of four analyses. [d]Not applicable.
[e]Concentration of residues occurred, but a concentration factor could not be determined because residues in whole potatoes were below detection limit.

References

Citations for the MRID documents referenced in this review are presented below. Submissions reviewed in this document are indicated by shaded type.

42514501 Decker, O. (1992) Determination of Trifluralin Residues in Potatoes and Processed Products: Lab Project Number: AAC8816. Unpublished study prepared by DowElanco in coop with AgraServe Incorp. and Wm. J. Engler & Assoc. 55 p.

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